What Is Claimed Is:

1. A high frequency sputtering device; comprising:

a processing chamber;

a high frequency power supply;

a cathode which is arranged inside said processing chamber and is electrically insulated from the processing chamber and has high frequency electric power applied to it from said high frequency power supply;

a target mounted on said cathode;

an annular dielectric member is in contact with an outer face of said cathode in a vicinity of said target;

said dielectric member has a projecting part which projects beyond the target mounting face of said cathode in the direction of the target;

an annular metal member is mounted on said projecting part of said dielectric member;

said metal member projects greater than or equal to a first distance inwardly of an inner circumferential face of said projecting part;

said metal member is not in contact with said cathode or said target;

a minimum distance between said metal member and said target is less than or equal to the first distance.

2. The high frequency sputtering device as claimed in claim 1, wherein said metal member is grounded.

3. The high frequency sputtering device as claimed in claim 1, wherein said metal member is electrically insulated from said processing chamber.

4. The high frequency sputtering device as claimed in claim 1, wherein said metal member and said target are made from the same material.

5. The high frequency sputtering device as claimed in claim 1, wherein there are a plurality of said metal members, and the gap between said metal members is bent such that it is not possible to look through from the mouth part of the gap to the surface of the dielectric member.

6. The high frequency sputtering device as claimed in claim 1, wherein the first distance is about 3 mm.

7. The high frequency sputtering device as claimed in claim 6, wherein said metal member and said target are made from the same material.

8. The high frequency sputtering device as claimed in claim 2, wherein said metal member and said target are made from the same material.

9. The high frequency sputtering device as claimed in claim 3, wherein said metal member and said target are made from the same material.

10. The high frequency sputtering device as claimed in claim 6, wherein there are a plurality of said metal members, and the gap between said metal members is bent such that it is not possible to look through from the mouth part of the gap to the surface of the dielectric member.

11. The high frequency sputtering device as claimed in claim 2, wherein there are a plurality of said metal members, and the gap between said metal members is bent such that it is not possible to look through from the mouth part of the gap to the surface of the dielectric member.

12. The high frequency sputtering device as claimed in claim 3, wherein there are a plurality of said metal members, and the gap between said metal members is bent such that it is not possible to look through from the mouth part of the gap to the surface of the dielectric member.

13. The high frequency sputtering device as claimed in claim 4, wherein there are a plurality of said metal members, and the gap between said metal members is bent such that it is not possible to look through from the mouth part of the gap to the surface of the dielectric member.

14. A high frequency sputtering device, comprising:

a processing chamber;

a high frequency power supply;

a cathode inside the processing chamber, the cathode being electrically insulated from the processing chamber and connected to the high frequency power supply, the cathode extending only along a given axial extent of the processing chamber;

a target mounted on a first side of the cathode; and

a metal plate mounted in the processing chamber adjacent to the cathode but in a location outside of the given axial extent of the cathode, the metal plate having an opening in a central portion thereof, wherein an outer circumferential edge of the metal plate is electrically connected to the processing chamber;

the metal plate is arranged so as to form a gap between the metal plate on the one hand and the cathode and the target on the other hand, wherein the gap is sufficiently narrow and sufficiently long so as to substantially prevent plasma from passing through the gap.

15. The high frequency sputtering device as claimed in claim 14, wherein the metal plate is located in radial alignment with the target.

16. The high frequency sputtering device as claimed in claim 14, wherein the metal plate is located on a side of the target opposite the cathode.

17. The high frequency sputtering device as claimed in claim 14, wherein the target and the metal plate are made of the same material.

18. The high frequency sputtering device as claimed in claim 14, wherein a width of the gap is less than or equal to about 3 mm.

19. The high frequency sputtering device as claimed in claim 14, wherein a length of the gap is greater than or equal to about 3 mm.

20. The high frequency sputtering device as claimed in claim 18, wherein a length of the gap is greater than or equal to about 3 mm.